

WHAT IS CLAIMED IS:

1. An electrical leak detecting apparatus for detecting electrical leak of a power supply device including a DC/DC conversion circuit in which a DC voltage supplied from a DC power supply is chopped and boosted to a desired level by an insulated transformer so as to be outputted through its rectification and smoothing and a DC/AC conversion circuit for converting into an AC voltage the DC voltage outputted from the DC/DC conversion circuit, with the power supply device being operated in a state of electrical insulation from ground so as to supply the AC voltage to a load, the electrical leak detecting apparatus comprising:

two voltage division elements which have an identical impedance value and are connected to each other in series between input terminals or output terminals of the DC/AC conversion circuit;

a detection element which has one end connected to a junction of the voltage division elements;

a capacitor which is inserted between the other end of the detection element and the ground; and

a decision means which receives a voltage drop across the detection element as a detection signal and processes the detection signal so as to judge occurrence of the electrical leak.

2. The electrical leak detecting apparatus as claimed in Claim 1, wherein at least one of the voltage division elements is formed by a capacitor.

3. The electrical leak detecting apparatus as claimed in Claim 1, wherein the decision means includes a decision unit for judging occurrence of the electrical leak in one zone by comparing with a predetermined threshold value an effective value of the AC voltage included in the detection signal and a further

decision unit for judging occurrence of the electrical leak in a further zone by comparing with a further predetermined threshold value an effective value of a frequency component equal to a chopping frequency included in the detection signal.

4. The electrical leak detecting apparatus as claimed in Claim 1, wherein the voltage division elements are each formed by a capacitor,

wherein the decision means includes

at least one of a decision unit for detecting the electrical leak in one zone by comparing with a predetermined threshold value an effective value of the AC voltage included in the detection signal and a further decision unit for detecting the electrical leak in a further zone by comparing with a further predetermined threshold value an effective value of a frequency component equal to a chopping frequency included in the detection signal, and

a still further decision unit for judging occurrence of the electrical leak in a still further zone by comparing with a still further predetermined threshold value corresponding to a polarity a DC component included in the detection signal.

5. The electrical leak detecting apparatus as claimed in Claim 1, wherein the voltage division elements are connected between the output terminals of the DC/AC conversion circuit and the voltage division elements and the detection elements are each formed by a capacitor.

6. The electrical leak detecting apparatus as claimed in Claim 1, further comprising;

a communication means for transmitting a decision result of the decision means to outside via a communication medium.

7. The electrical leak detecting apparatus as claimed in Claim 3, further

comprising;

a communication means for transmitting a decision result of the decision means to outside via a communication medium.

8. The electrical leak detecting apparatus as claimed in Claim 4, further comprising;

a communication means for transmitting a decision result of the decision means to outside via a communication medium.

9. The electrical leak detecting apparatus as claimed in Claim 1, further comprising:

a switch member for opening or closing a power supply path from the DC/AC conversion circuit to the load;

wherein the decision means judges occurrence of the electrical leak in a no-load state of the power supply device by opening the switch member prior to start of power supply from the power supply device to the load.

10. The electrical leak detecting apparatus as claimed in Claim 3, further comprising:

a switch member for opening or closing a power supply path from the DC/AC conversion circuit to the load;

wherein the decision means judges occurrence of the electrical leak in a no-load state of the power supply device by opening the switch member prior to start of power supply from the power supply device to the load.

11. The electrical leak detecting apparatus as claimed in Claim 4, further comprising:

a switch member for opening or closing a power supply path from the DC/AC conversion circuit to the load;

wherein the decision means judges occurrence of the electrical leak in a no-load state of the power supply device by opening the switch member prior to start of power supply from the power supply device to the load.